

Patent Claims

1. Intervertebral implant (1), specifically an artificial intervertebral disk, with a central axis (2) and

A) an upper plate-shaped section (10), suitable for laying onto the base plate of a vertebral body lying above, wherein the upper section (10) is provided with one ventral side area (11), one dorsal side area (12), two lateral side areas (13;14), an upper apposition surface (15) and a lower surface (16);

B) and a lower plate-shaped section (30) suitable for laying onto the cover plate of a vertebral body lying below, wherein the upper section (20) is provided with one ventral side area (31), one dorsal side area (32), two lateral side areas (33;34), an upper apposition surface (35) and a lower surface (36),

characterised in that

C) between the upper and lower section (10;30), a central, plate-shaped section (20) is arranged, wherein the central section (20) is provided with a ventral side surface (21), a dorsal side surface (22), two lateral side surfaces (23;24), a lower surface (25) facing the lower section (30) and an upper surface (26) facing the upper section (10);

D) between the upper section (10) and the central section (20), a first circular-cylindrical rod (40) with a longitudinal axis (41) is arranged; and

E) between the lower section (30) and the central section (20), a second circular-cylindrical rod (50) with a longitudinal axis (51) is arranged.

2. Intervertebral implant (1) according to Claim 1, characterised in that the lower surface (16) of the first section (10) and the upper surface (26) of the central section (20) are formed as sliding surfaces for the first, circular-cylindrical rod (40) that come in contact with them.

3. Intervertebral implant (1) according to Claim 2, characterised in that the two sliding surfaces (16;26) for the first circular-cylindrical rod (40) are formed as flat, circular-cylindrical or conical planes.

4. Intervertebral implant (1) according to one of the Claims 1 to 3, characterised in that the lower surface (25) of the central plate-shaped section (20) and the upper surface

(36) of the lower plate-shaped section (30) are formed as sliding surfaces for the second, circular-cylindrical rod (50) that come in contact with them.

5. Intervertebral implant (1) according to Claim 4, characterised in that the two sliding surfaces (25;36) for the second, circular-cylindrical rod (50) are formed as flat, circular-cylindrical or conical planes.

6. Intervertebral implant (1) according to one of the Claims 2 to 5, characterised in that one or more of the sliding surfaces (16;26;25;36) is provided at least partially with a peripheral perimeter (70).

7. Intervertebral implant (1) according to one of the Claims 2 to 6, characterised in that a number of limits/stops (80) are provided on one or more of the sliding surfaces (16;26;25;36) for the rotation of the cylindrical rods (40;50) around the central axle (2).

8. Intervertebral implant (1) according to one of the Claims 2 to 6, characterised in that a pair of grooves (17;27;28;37) is provided as a bearing for the first and/or second rod (40;50) on one or both of the sliding surface pairs (16;26; 25;36) formed by the four sliding surfaces (16;26;25;36).

9. Intervertebral implant (1) according to Claim 8, characterised in that the pair of grooves (17;27;28;37) is congruent to the circular-cylindrical rods (40,50) carried therein.

10. Intervertebral implant (1) according to Claim 8 or 9, characterised in that at least one pair of grooves (17;27;28;37) is designed incongruent to the circular-cylindrical rods (40,50) it has to bear and is preferably provided with a width that allows a limited rotation of the rods (40;50) around the central axle (2) in the grooves (17;27;28;37).

11. Intervertebral implant (1) according to one of the Claims 8 to 10, characterised in that at least one section of the grooves (17;27;28;37) is provided with a limit/stop (75) attached on the periphery to prevent axial shifting of the rod (40;50) carried therein.

12. Intervertebral implant (1) according to one of the Claims 8 to 11, characterised in that the one pair of grooves (17;27) for the first rod (40) runs from the ventral to the dorsal side surfaces (11;21;31;12;22;32) of the corresponding plate-shaped sections (10;20;30) and the second pair of grooves (28;37) for the second rod (50) runs between the lateral side surfaces (13;14;23;24;33;34) of the corresponding plate-shaped sections (10;20;30).

13. Intervertebral implant (1) according to Claim 7, characterised in that the limits/stops (80) are arranged so that the longitudinal axis (41) of the first rod (40) intersect the ventral and dorsal side surfaces (11;21;31;12;22;32) of the corresponding plate-shaped sections (10;20;30), and that the longitudinal axis (51) of the second rod (50) intersect the lateral side surfaces (13;14;23;24;33;34) of the corresponding plate-shaped sections (10;20;30).

14. Intervertebral implant (1) according to one of the Claims 1 to 13, characterised in that an elastically malleable means (60) is provided that holds the upper and lower plate-shaped sections (10;30) together with the intermediate lying central plate-shaped section (20) and the two rods (40;50).

15. Intervertebral implant (1) according to Claim 14, characterised in that the elastically malleable means (60) is provided as springs (61) or elastomer connection elements.

16. Intervertebral implant (1) according to one of the Claims 2 to 15, characterised in that the four sliding surfaces (16;25;26;36) and the two rods (40,50) are made of metal.

17. Intervertebral implant (1) according to one of the Claims 2 to 15, characterised in that the four sliding surfaces (16;25;26;36) are made of metal and the two rods (40,50) are made of ceramic.

18. Intervertebral implant (1) according to one of the Claims 1 to 17, characterised in that means (90) are provided that are suitable to create temporary blocking of the mobility of the three plate-shaped sections (10;20;30) relative to each other.

19. Intervertebral implant (1) according to Claim 18, characterised in that the means (90) on the two ventral side surfaces (11;21;31) can be attached to the three plate-shaped sections (10;20;30).

20. Intervertebral implant (1) according to Claim 18 or Claim 19, characterised in that the means (90) comprise an insert (91) with a lower end (95) and an upper end (96) and a depression (92;93) in the surfaces (16;36) on each of the two external plate-shaped sections (10;30), which are open on the ventral side surfaces (11;31) of the two external plate-shaped sections (10;30), and that the insert (91) can be inserted with its ends (95;96) into each of the two depressions (92;93).

21. Intervertebral implant (1) according to Claim 20, characterised in that the depressions (42;43) are dovetail guides and the ends (45;46) on the insert (41) are arranged complementary to these dovetail guides.

22. Intervertebral implant (1) according to Claim 21, characterised in that the dovetail guides are tapered from the ventral side surfaces (11;31) of the two external plate-shaped section (10;30) towards the dorsal side surfaces (12;32) of the two external plate-shaped sections (10;30).

23. Process for the replacement of a defect, natural intervertebral disk characterised by an intervertebral implant (1), with the steps:

- A) blocking of the joint(s) (38;39) of an intervertebral implant (1) through the special means (90) in a certain position of the joint(s) (38;39);
- B) insertion of the intervertebral implant (1) into the intervertebral space to be treated;
- C) release and removal of the device (90) inserted into the intervertebral implant (1) for blocking the joint(s) (38;39).

24. Process according to Claim 23, characterised in that it additionally comprises the subsequent blocking of the joint(s) (38;39) on the implanted intervertebral implant (1) through the means (90).